

Claims:

1. ✓ In a process for producing polysaccharide ethers comprising:
  - (i) treating a polysaccharide with a basic compound to promote swelling of the polysaccharide;
  - (ii) reacting the polysaccharide with at least one derivatizing agent in a liquid medium under conditions effective to promote a reaction between the polysaccharide and the derivatizing agent and form a reaction product comprising a polysaccharide ether and the basic compound;
  - (iii) treating at least a portion of the reaction product comprising the basic compound with an acidic compound to provide a neutralized liquid comprising a salt of the acidic compound and the basic compound; and
  - (iv) separating the polysaccharide ether from at least one of the reaction product or the neutralized liquid:

The improvement which comprises subjecting the neutralized liquid to an electric current and suitable means effective to promote the conversion of the salt to the acidic compound and the basic compound.

2. The process of claim 1 which provides an acid product stream comprising the acidic compound.
3. The process of claim 1 which provides a base product stream comprising the basic compound.

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4. The process of claim 1 further comprising utilizing at least a portion of the acid product stream in step (iii) of claim 1.

5. The process of claim 1 further comprising utilizing at least a portion of the base product stream in step (i) of claim 1.

6. The process of claim 1 wherein the liquid medium further comprises water.

7. The process of claim 1 further comprising contacting at least a portion of the neutralized liquid with a membrane to provide a source of hydrogen and hydroxyl ions and enhance the separation of the acidic compound and the basic compound from the neutralized liquid.

8. The process of claim 7 wherein the source of the hydrogen and hydroxyl ions separation means is a bipolar membrane.

9. The process of claim 1 wherein the electric current has a current density of from about 500 to 2000 amps per square meter.

10. The process of claim 1 wherein the reaction product further comprises at least one organic solvent and a residue of the polysaccharide.

11. The process of claim 10 wherein the organic solvent is selected from the group consisting of acetone, ethanol, isopropyl

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alcohol, t-butyl alcohol, mono-, di-, and triethylene glycol and mixtures thereof.

12. The process of claim 8 further comprising contacting the neutralized liquid with a semi-permeable membrane prior to contacting the neutralized liquid with the bipolar membrane to promote the separation of the salt from the organic solvent and the residue of the polysaccharide.

13. The process of claim 12 wherein said contacting with the semi-permeable membrane is conducted at an alkaline pH.

14. The process of claim 13 wherein the pH is effective to inhibit the deposition of the residue of the polysaccharide on the membrane.

15. The process of claim 14 wherein the pH is greater than about 10.

16. The process of claim 15 wherein the pH is from about 10.5 to 14.

17. The process of claim 1 wherein the basic compound is selected from the group consisting of sodium hydroxide, potassium hydroxide, calcium hydroxide, magnesium hydroxide, lithium hydroxide, ammonium hydroxide and mixtures thereof.

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18. The process of claim 1 wherein the acidic compound is selected from the group consisting of acetic acid, nitric acid, hydrochloric acid, sulfuric acid, phosphoric acid and mixtures thereof.

19. The process of claim 1 wherein the polysaccharide is selected from the group consisting of cellulose, starch, pectin, chitosan; chitin; agar, carrageenan; alginate; guar, arabic, tragacanth; xanthan gum; and mixtures thereof.

20. The process of claim 1 wherein the derivatizing agent is an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide, butylene oxide and mixtures thereof.

21. The process of claim 1 which further comprises derivatizing the polysaccharide ether with at least one cationic, anionic or hydrohobic substituent.

22. In a process for producing cellulose ethers comprising:

- (i) treating cellulose with a basic compound to promote swelling of the cellulose;
- (ii) reacting the cellulose with at least one derivatizing agent in a liquid medium comprising at least one organic solvent under conditions effective to promote a reaction between the cellulose and the derivatizing agent and form a reaction product comprising a cellulose ether, the basic compound and the organic solvent and a residue of the cellulose;

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(iii) treating at least a portion of the reaction product comprising the basic compound with an acidic compound to provide a neutralized liquid comprising a salt of the acidic compound and the basic compound; and

(iv) separating the cellulose ether from at least one of the reaction product or the neutralized liquid:

The improvement which comprises:

(a) subjecting the neutralized liquid to a first separation under conditions effective to separate the salt from the organic solvent and the residue of the cellulose and provide a purified, neutralized liquid; and

(b) subjecting the purified, neutralized liquid to an electric current and suitable means effective to promote the conversion the salt to the acidic compound and the basic compound.

23. The process of claim 22 wherein said subjecting of the purified, neutralized liquid with the electric current is conducted in the presence of a bipolar membrane effective to provide a source of hydrogen and hydroxyl ions.

24. The process of claim 22 wherein the first separation is conducted by electrodialysis with a semi-permeable membrane.

25. The process of claim 24 wherein the electrodialysis is conducted at an alkaline pH. —

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26. The process of claim 25 wherein the pH is effective to inhibit the deposition of the residue of the cellulose on the membrane.
27. The process of claim 26 wherein the pH is greater than about 10.
28. The process of claim 27 wherein the pH is from about 10.5 to 14.
29. The process of claim 22 wherein the derivatizing agent is an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide, butylene oxide and mixtures thereof.
30. The process of claim 22 wherein the acidic compound is selected from the group consisting of acetic acid, nitric acid, hydrochloric acid, sulfuric acid, phosphoric acid, and mixtures thereof.
31. The process of claim 22 wherein the basic compound is selected from the group consisting of sodium hydroxide, potassium hydroxide, calcium hydroxide, magnesium hydroxide, lithium hydroxide, ammonium hydroxide and mixtures thereof.
32. The process of claim 22 which further comprises derivatizing the cellulose ether with at least one cationic, anionic or hydrophobic substituent.

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